CLAIMS

1. A method of manufacturing a pressed thermal insulation body comprising the steps of:

(1) providing a dry composition consisting of:

(a) 10 to 100 percent by weight of volatilised silica containing a dispersion of 0.5 to 6 percent by weight of carbon;

(b) 0 to 40 percent by weight of infra-red opacifier;

(c) 0 to 50 percent by weight of particulate inorganic filler material; and

(d) 0 to 25 percent by weight of reinforcing filaments;

(2) pressing the dry composition from step (1) to form a body of a desired shape and density; and

(3) heat treating the pressed body at a temperature in the range from 400 degrees Celsius to 1000 degrees Celsius to effect hardening thereof.

2. A method according to claim 1, characterised in that 80 to 98 percent by weight of the volatilised silica is provided in the composition.

3. A method according to claim 2, characterised in that 88 to 98 percent of the volatilised silica is provided in the composition.

4. A method according to claim 1, 2 or 3, characterised in that the carbon content of the volatilised silica is from 0.8 to 2 percent by weight.

5. A method according to any preceding claim, characterised in that during heating of the body the carbon is burnt away such that less than 0.1 percent by weight thereof remains with reference to the volatilised silica.

6. A method according to any preceding claim, characterised in that the body is heated to a temperature in the range from 450 degrees Celsius to 800 degrees Celsius.

7. A method according to claim 6, characterised in that the body is heated to a temperature in the range from 500 degrees Celsius to 800 degrees Celsius.

8. A method according to claim 7, characterised in that the body is heated to a temperature in the range from 600 degrees Celsius to 800 degrees Celsius.

9. A method according to any preceding claim, characterised in that 0 to 30 percent by weight of the infra-red opacifier is provided.

10. A method according to any preceding claim, characterised in that the infra-red opacifier is a material which scatters or absorbs infra-red radiation.

11. A method according to claim 10, characterised in that the infra-red opacifier is selected from titanium oxide, iron oxide, mixtures of titanium oxide and iron oxide, zirconium oxide, zirconium silicate, chromium oxide and silicon carbide.

12. A method according to any preceding claim, characterised in that 0 to 30 percent by weight of the particulate inorganic filler material is provided.

13. A method according to any preceding claim, characterised in that the particulate inorganic filler material is selected from manganese oxide and material of low density, and mixtures thereof.

14. A method according to claim 13, characterised in that the low density material is selected from silica, titania, alumina, vermiculite, perlite, expanded clays and glass microspheres.

15. A method according to claim 14, characterised in that the silica, titania or alumina is or are of a form selected from aerogel, xerogel, pyrogenic, hydrophobic pyrogenic and precipitated forms.

16. A method according to any preceding claim, characterised in that from 2 to 10 percent by weight of the reinforcing filaments are provided.

17. A method according to any preceding claim, characterised in that the reinforcing filaments are selected from silica, quartz, E glass and modifications thereof, S glass and modifications thereof, R glass, ECR glass, C glass, A glass, ceramic fibre materials, body-fluid-soluble fibres, and mixtures thereof.

18. A method according to any preceding claim, characterised in that the density of the pressed composition is from 300 to 1200 kg/m^3.

19. A method according to claim 18, characterised in that the density of the pressed composition is from 500 to 800 kg/m^3.

20. A method according to any preceding claim, characterised in that the heat treated body has a Shore A hardness greater than 50.

21. A method according to claim 20, characterised in that the heat treated body has a Shore A hardness greater than 65.

22. A method according to claim 21, characterised in that the heat treated body has a Shore A hardness not less than about 80.

23. A method according to any preceding claim, characterised in that the heat treated body has a flexural strength greater than 450 kN/m^2.

24. A method according to claim 23, characterised in that the heat treated body has a flexural strength greater than 600 kN/m^2.

25. A method according to claim 24, characterised in that the heat treated body has a flexural strength not less than about 1000 kN/m^2.

26. A method according to claim 1 of manufacturing a pressed thermal insulation body in the form of an outer part for a heater comprising the steps of:

(1) providing a dry composition consisting of:

(a) 65 to 98 percent by weight of volatilised silica containing a dispersion of 0.5 to 6 percent by weight of carbon;

(b) 0 to 20 percent by weight of infra-red opacifier;

(c) 0 to 10 percent by weight of particulate inorganic filler material; and

(d) 1 to 15 percent by weight of reinforcing filaments;

(2) pressing the dry composition from step (1) to form an outer part of a heater of a desired shape and density; and

(3) heat treating the pressed outer part at a temperature in the range from 500 degrees Celsius to 900 degrees Celsius to effect hardening thereof.

27. A method according to claim 1, characterised in that 83 to 98 percent by weight of the volatilised silica is provided in the composition.

28. A method according to claim 26 or 27, characterised in that the carbon content of the volatilised silica is from 0.8 to 2 percent by weight.

29. A method according to claim 26, 27 or 28, characterised in that during heating of the body the carbon is burnt away such that less than 0.1 percent by weight thereof remains with reference to the volatilised silica.

30. A method according to any one of claims 26 to 29, characterised in that the particulate inorganic filler is selected from pyrogenic and hydrophobic pyrogenic silica and mixtures thereof.

31. A method according to any one of claims 26 to 30, characterised in that from 2 to 10 percent by weight of the reinforcing filaments are provided.

32. A method according to any one of claims 26 to 31, characterised in that the reinforcing filaments are selected from silica, quartz, E glass and modifications thereof, S glass and modifications thereof, R glass, ECR glass, C glass, A glass, ceramic fibre materials, body-fluid-soluble fibres, and mixtures thereof.

33. A method according to any one of claims 26 to 32, characterised in that the density of the pressed composition is from 500 to 800 kg/m^3.

34. A method according to any one of claims 26 to 33, characterised in that the heat treated outer part has a flexural strength greater than 450 kN/m^2.

35. A method according to claim 34, characterised in that the heat treated outer part has a flexural strength greater than 600 kN/m^2.

36. A method according to any one of claims 26 to 35, characterised in that the outer part is heat treated for from 15 to 25 minutes.

37. A method according to claim 36, characterised in that the outer part is heat treated for about 20 minutes.

38. A method according to any one of claims 26 to 37 and including the step of co-moulding a heating element with the outer part as the outer part is pressed.

39. A method according to claim 38 and including the step of co-moulding a connector block with the heating element.